



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

DISPLACEMENTS OF DARK HYDROGEN LINES

Line Com- ponent	H β			H γ			H δ			Mean
	$\Delta\lambda$	i	$10^4\kappa$	$\Delta\lambda$	i	$10^4\kappa$	$\Delta\lambda$	i	$10^4\kappa$	
a		..		-11.6	3	-26.6	-10.8	5	-26.4	-26.5
b		..		-13.0	4	-30.0	-12.4	5	-30.0	-30.0
c	-17.1	2	-35.2	-15.6	5	-35.9	-14.8	5	-36.0	-35.9
d		..		-18.6 $\pm$ 1		-43.	-18.4 $\pm$ 1		-45.	-44.
e	-25.3	3	-51.5	-22.5	3	-51.8	-21.4	2	-51.9	-51.8
f	-29.2	2	-60.1	-25.8	1	-59.6	-24.5 $\pm$ 1		-59.5	-59.7

Components "a" and "b," which are separated from each other by only $1\frac{1}{2}$ angstroms, blend at H β , and are barely resolved for the systems H γ and H δ . While there is little question of the duplicity, the measurement of these components may be somewhat inexact because of their closeness. There is perhaps some uncertainty with respect to component "d," which is faint and is not recorded so definitely as the others, but it is probably present, and may be double.

The displacement of the metallic dark line spectrum as determined by some of the stronger lines is as follows, the symbol κ having the same significance as before:

Normal λ	Element	Displacement	$10^4\kappa$
4233.3	Fe	-11.2A	-26.4
4395.2	Ti	-11.6	-26.3
4549.7	Fe-Ti	-12.4	-27.3
5018.6	Fe	-13.8	-27.5
	Mean		-26.9

The value of κ is therefore essentially in agreement with that corresponding to component "a" of the hydrogen series, that is, the metallic dark line spectrum agrees in position with the least displaced set of hydrogen dark lines.

The two strong lines to the violet of H δ , which were so conspicuous in the spectrum of *Nova Aquilae* No. 3, and have been ascribed by Baxandall to the enhanced nitrogen lines at 4097 and 4103 A, are strongly impressed on a plate taken on September 21st. They are less displaced than in the spectrum of *Nova Aquilae*.

September 22, 1920.

W. H. WRIGHT.

THE SPECTRUM OF NOVA CYGNI 1920

Observations of the spectrum of *Nova Cygni* were secured on August 22nd and successive nights up to September 3rd with the exception of August 24th when clouds prevented us from obtaining

photographs. The maximum brightness of the star seems to have been reached during the night of August 23-24 when the magnitude was estimated at about 1.9.

The earliest spectrum of the star showed strong absorption lines of hydrogen displaced 6 angstrom units toward the violet and a number of fainter lines most of which could be identified with enhanced lines of iron and other elements. The spectrum bore many resemblances to that of *α Cygni* and was classified as A2. Helium probably was not present, altho a faint line near the displaced position of λ 4026 might perhaps be identified with it. It is more likely, however, to be due to enhanced titanium. H and K show narrow absorption lines from which the radial velocity of the star may be determined.

A faint brightening of the spectrum on the red side of the hydrogen absorption lines was observed on August 23rd, and on August 25th bright hydrogen bands were unmistakable. These became steadily stronger and bright bands due to the more prominent enhanced lines appeared thruout the spectrum. The absorption lines grew wider and more diffuse on successive dates and measurements were difficult. By August 27th the spectrum presented a definite appearance of bright bands interspersed with broad absorption lines superposed on a fairly strong continuous spectrum. The bright bands began to show the structure characteristic of most novae, with two maxima at the sides and a broad faint absorption band between. On September 4th it was possible to measure two components of the absorption lines of hydrogen.

The displacements of the absorption lines show very remarkable changes, a great increase taking place between the nights of August 23rd and 25th. The following summary shows the displacements of the hydrogen and the metallic lines for the dates of observation:

	Hydrogen	Metallic Lines
August 22.....	-6	-6.1
August 23.....	7	6.7
August 25.....	13	11.8
August 26.....	15	12.3
August 27.....	16	13.5
August 29.....	17	11.5
August 30.....	18 $\pm$	11.7
August 31.....	17	11.8
Sept. 1.....	18	12.5
Sept. 4.....	-22, -15	11.4

The difference between the values for hydrogen and the other lines is evidently due in large part to the widening of the hydrogen

lines toward the violet and the formation of the second component which was measured on September 4th. The strong enhanced lines at λ 4924 and 5018 behave very much like those of hydrogen in this respect and give values in good agreement with the latter. It is of interest to note that the minimum displacement in the case of this star as in that of *Nova Aquilae* of 1918 agrees fairly well with the maximum of light and increases rapidly when the star begins to decline in light.

The radial velocity of *Nova Cygni* as determined from the H and K lines on 15 spectrograms is -18 km. The component of the solar motion in the direction of the star is 18 km., thus indicating that the star has no appreciable velocity relative to the stars in general.

W. S. ADAMS,

A. H. JOY.

TWO STARS OF SPECTRAL CLASS R WITH LARGE RADIAL VELOCITIES

The number of stars known to belong to spectral Class R is small compared with that for almost any other type and consequently their average radial velocity would be greatly affected by a few abnormally high values. Accordingly it is of interest to call attention to two stars of this class whose radial velocities reduced to the Sun are exceptional. They are:

Name	Mag.	α 1920	δ 1920	velocity	No. of plates
BD+23° 123	8.3	$0^h 50^m .0$	$+23^\circ 38'$	-242 km./sec.	2
BD+20° 5071	8.7	$22\ 0\ .6$	$+20\ 40$	-416 km./sec.	2

These velocities have been derived from some of the best and most characteristic lines for this class of spectrum, assuming the wavelengths derived by Rufus¹ but they should be considered as approximations only. So far as the writer knows no velocity has been published previously for the first star.

BD+20° 5071 was observed by Rufus, who refers to difficulties in treating the measures he made. From three plates he deduced -49 km. sec. as the radial velocity reduced to the Sun. The writer feels that the larger value (-416 km. sec.) must be close to the true value for the following reasons; (a) it seems to give the best coincidence of lines when this star is compared with others on the Hartmann spectro-comparator, (b) it gives a better agreement between the lines of this and other Class R stars in character and intensity

¹Publ. of the Observatory, Univ. of Mich., 2, 103, 1915.